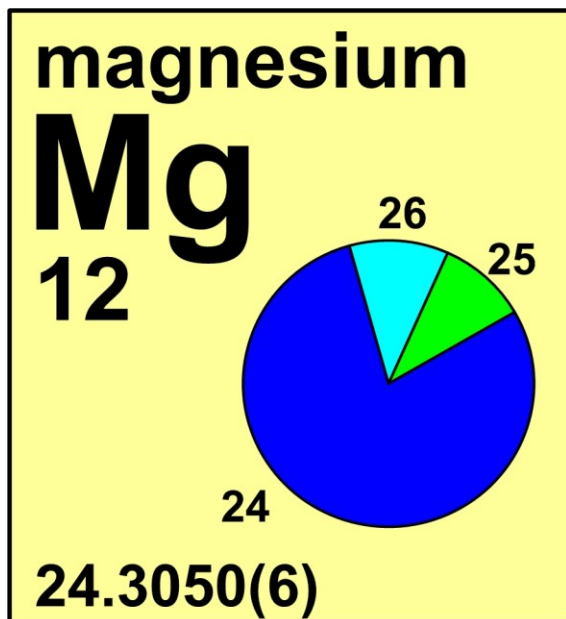


magnesium

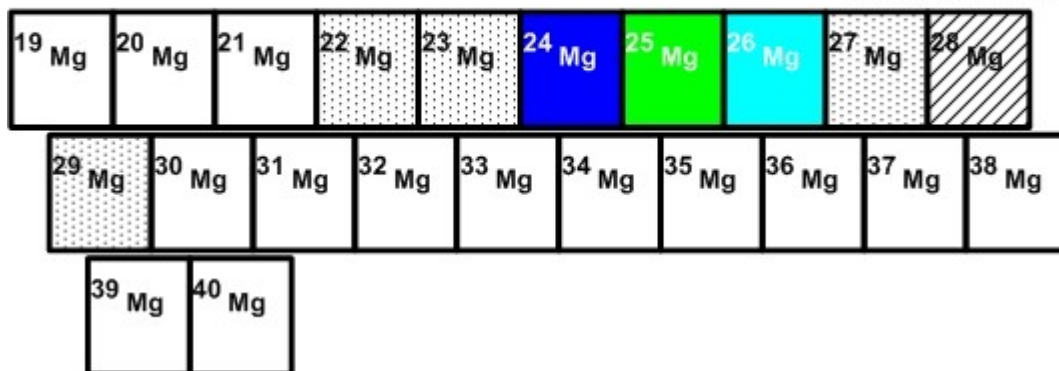


Stable isotope	Atomic mass*	Mole fraction
^{24}Mg	23.985 0417	0.7899
^{25}Mg	24.985 836 92	0.1000
^{26}Mg	25.982 592 93	0.1101

* Atomic mass given in unified atomic mass units, u.

Half-life of radioactive isotope

Less than 1 second
Between 1 second and 1 hour
Greater than 1 hour



Important applications of stable and/or radioactive isotopes

Isotopes in planetary sciences

- ^{26}Mg is a stable isotope and is the radiogenic daughter isotope of ^{26}Al , which is produced by cosmic rays in space and in the atmosphere. At a half life of 7.2×10^5 years, anomalous abundances of ^{26}Mg in meteoritic inclusions indicates that this material must have been formed before all ^{26}Al had decayed in the solar nebula, i. e. at a very early stage of the solar system.



Figure 1: Meteorite from Carbonaceous chondrites group. This group is defined but their higher levels of Al, Mg and Ca relative to Si.

Isotopes in tracer studies

- 1) Natural magnesium enriched in the stable isotopes ^{25}Mg and ^{26}Mg can be used as tracers in human studies to assess absorption, excretion, distribution and utilization of Mg in basic and applied research.
- 2) Isotopically enriched ^{28}Mg can be used to study magnesium transfer processes in the biosphere, geosphere and hydrosphere as well as in isotope dilution mass spectrometry for quantitative analysis of Mg. The potential health and environmental hazards of this magnesium radioisotope limit its use for such applications.

Isotopes in industrial applications and engineering

- 1) ^{27}Mg , a beta emitting radioisotope of short half life (9.5 min), can be used to locate leaks in water pipes.